Racing

The man to see about a horse

Greg Wood meets the founder of Thoroughbred Genetics Ltd

It is less than 50 miles from the Sittingbourne Research Centre to the winning post at Epsom, the "piece of wood" which the great breeder Federico Tesio once described as the basis of the thoroughbred's very existence, but it feels more like 500. The precise rows of dozens of identical low-rise labs and offices are a world away from the wild excesses of Derby day.

Yet there is one hi-tech start-up here with its roots in the turf. At 10/26 Innovations Buildings, Dr Steve Harrison is on the same quest as Tesio, and hosts of thoroughbred breeders before and since. At its end, as always, is that mythical beast, the perfect racehorse and stallion.

Not that you will find any horses on SRC property. That would be far too old-economy. Harrison is a geneticist and the founder of the Thoroughbred Genetics Company Limited, which gives clients the chance to rely on something more than pedigrees and prayer, and test their prospective purchases at a molecular level.

"Given that the racing industry is founded entirely on genetics," Harrison says, "it's amazing that practically no one who is involved with it is a geneticist."

Yet this is how it has always been. The science of genetics is 100 years old but some breeders still rely on hunches, or rule-of-thumb theories with no scientific basis, when they plan their matings. Yearlings, meanwhile, can be knocked down for huge prices simply because they look good on paper.

Harrison does not promise certainty, or anything like. What he does offer is a possible edge in a game of percentages, in which success may be the size of your failure rate. For a few hundred pounds he will scan the chromosomal DNA of a thoroughbred for about 50 different genetic markers, indicating the amount of variability in its genetic make-up.

Horses which have a lot of variability (or are heterozygous, in technical language) are, in genetic terms, considered more healthy than homozygous animals, which show relatively little variability in their genes. However, while heterozygous horses tend to be better athletes, there is a genetic trade-off. At stud, that same variability makes it less likely they will pass their excellence on to their offspring.

What Harrison attempts to find — or produce, by recommending matings to breeders — are horses that tread a middle path, neither too homozygous or heterozygous to be a worthwhile long-term investment.

"You can tell a certain amount from a pedigree," he says, "but you can't tell how homozygous an individual is. It's hard to put an exact value on it, but you can see a very homozygous horse from looking at the test.

"Breeding tends to be cyclical in that people will look at a pedigree and think that it's inbred and decide to outcross, but sometimes you find that an animal which looks inbred on pedigree isn't necessarily very homozygous, so it gives you a chance to inbreed a bit more, within limits."

Confidentiality prevents Harrison from naming his clients, though he does say that some of Europe's more "forward-thinking" racing and breeding operations have come to him for genetic analyses. A year or so ago he advised one client on a number of potential purchases, putting ticks against a couple and a big cross against another despite an outstanding pedigree. The client bought the lot anyway but Harrison notes that, while the ones he recommended did well last season, the one he did not like has yet to see a track.

Sometimes, of course, there are other factors to consider. "We can make recommendations," he says, "but what is genetically suitable will sometimes be different from what is commercially suitable." In other words, some breeders will use a particular stallion because they know his offspring will sell at a premium, whatever it might do on the track.

Harrison's tests can have other uses too. "We dealt with someone just recently," he says, "who was interested in a debate going back almost 300 years. There are two families which trace back to mares which were at Hampton Court in the early 1700s, but there's been a long debate about whether there were really two mares, or just one."

Here, Harrison looked at a different form of DNA, called mDNA, which is handed down almost unchanged through the female line across many generations. When he tested the mDNA in modern-day representatives of the two families, he found significant differences, showing that there were indeed two original mares, not one. "This question had been bugging people for more than 250 years," he says, "but we could answer it in a few minutes with a simple test."

Simple or not, Harrison's lab testifies to a thriving business. One machine, which looks like a cross between a test-tube rack and an ice-cream maker, cost almost £10,000, and that is one of the cheaper ones. Another £100,000-worth will arrive in the next few months.

There are rich new markets to explore, too. "I'm very busy at the moment," he says. "I'm having our website translated into Arabic."

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